



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/557,820

11/23/2005

Kwan Young Han

074998-0012

2544

20277 7590 03/18/2008
MCDERMOTT WILL & EMERY LLP
600 13TH STREET, N.W.
WASHINGTON, DC 20005-3096

EXAMINER

TRAN, TONY

ART UNIT

PAPER NUMBER

2818

MAIL DATE

DELIVERY MODE

03/18/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/557,820	Applicant(s) HAN ET AL.	
	Examiner TONY TRAN	Art Unit 2818	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 December 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

REMARKS

Claims 1-14 are pending of which claim 1 is independent. In this Amendment, claim 1 has been amended to clarify an aspect of the invention.

Response to Arguments

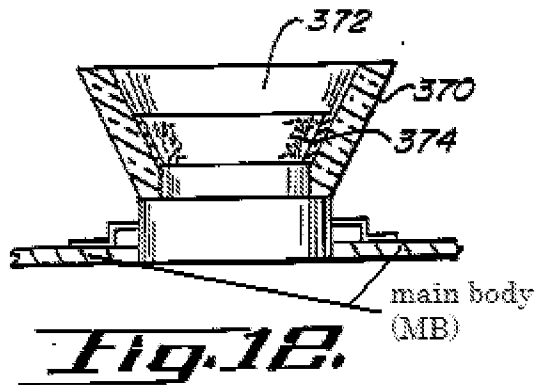
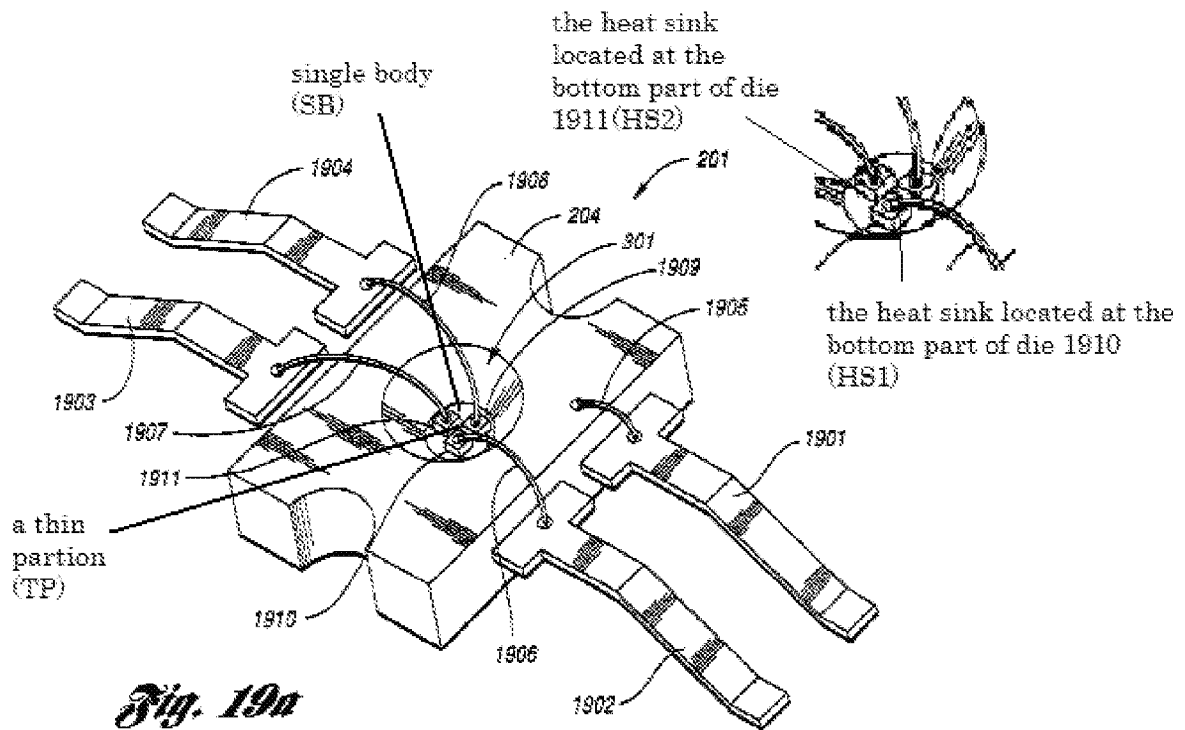
1. Applicant's arguments with respect to claims 1-14 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

35 U.S.C. 103 Conditions for patentability; non-obvious subject matter.

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-6, 8-10 and 11-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roberts et al. (Patent No.: US 6335548 B1) (hereinafter Roberts) in view of Pederson, one embodiment, FIG. 12 (Pub. No.: US 2005/0001562 A1) filed in IDS on 7/26/07.



Regarding Claim 1, Roberts, one embodiment, FIGS. 19A-19B teaches a high power light emitting diode package comprising:

a main body (204, col. 29, lines 61-65);

at least two lead terminals (1902 & 1903, col. 30, lines 5-10) fixed to the main body (204); and

at least two heat sinks (HS1 & HS2, FIG. 19a [as shown above], note that HS1 and HS2 are sitting on top of heat extraction 204 which are conducting heat to 204 therefore, they are considering as the heat sinks) of electrically and thermally conductive materials, the heat sinks being separated from each other and fixed to the main body (204).

However, Roberts et al., one embodiment, FIGS. 19A-B does not disclose wherein a lower portion of each of the light emitting diode is exposed to the outside of the bottom surface of the main body through the opening of the main body.

Nevertheless, Pederson, one embodiment, FIG. 12 does teach wherein the light emitting diode (306, [0124]-[0127]) is exposed to the outside and through the opening of the main body (MB, FIG. 12 [as shown above], note that 306 is extending through the circuit substrate).

Therefore, since both Roberts, one embodiment, FIGS. 19A-B and Pederson, one embodiment, FIG. 12 teach on the light emitting device. It would have been obvious to one ordinary skill in the art at the time the invention was made to further including wherein the light emitting diode is exposed to the outside and through the opening of the main body in Roberts et al., one embodiment, FIGS. 19A-B, as taught by Pederson, one embodiment, FIG. 12. One would have been motivate to make such a change to improve the electrical characteristic and performance of the light emitting device.

Furthermore, the combining of Roberts, one embodiment, FIGS. 19A-B and Pederson, one embodiment, FIG. 12 would result wherein a lower portion of each of the at

Art Unit: 2818

least two heat sinks is exposed to the outside of the bottom surface of the main body through the opening of the main body.

Regarding **Claims 2-3**, Roberts, one embodiment, FIGS. 19A-19B further teaches the package of claim 1, wherein each of the at least two heat sinks (HS1 & HS2) has a reflective surface (301, col. 30, lines 9-11 & col. 12, lines 10-15) extended from an upper surface thereof (claim 2).

wherein the at least two heat sinks are a pair (HS1 & HS2, FIG. 19a as shown above) (claim 3).

Regarding **Claim 4**, Roberts, one embodiment, FIGS. 19A-19B further teaches the package of claim 3, further comprising: at least one light emitting diode die (top part of die 1910 or 1911) mounted on upper surfaces of the at least two heat sinks (HS1 & HS2), the die (1910 & 1911) being directly and electrically connected to the heat sinks (HS1 & HS2) through a surface of the die (top surface of 1910 & 1911).

Regarding **Claim 5**, Roberts, one embodiment, FIGS. 19A-19B further teaches the package of claim 4, further comprising: bonding wires (1906 & 1907) electrically connecting the at least two lead terminals (1902 & 1903), the at least two heat sinks (HS1 & HS2) and the at least one light emitting diode die (1910 & 1911).

Regarding **Claim 6**, Roberts, one embodiment, FIGS. 19A-19B further teaches package of claim 4, further comprising: a lens (401, col. 30, lines 9-10) attached to the main body (204), the lens (401) enclosing the at least one light emitting diode die (1910 & 1911).

Regarding **Claim 8**, Roberts et al., one embodiment, FIGS. 19A-B further teaches the package of claim 4, further comprising: a fluorescent material converting the wavelength of light emitted from the at least one light emitting diode die (fluorescent dyes....within the encapsulant....re-emit it at lower wavelength, col. 24, lines 39-45, note that the encapsulant is the 203, FIG. 9B, col. 30, lines 8-10)

Regarding **Claim 9**, Roberts et al., one embodiment, FIGS. 19A-B further teaches he package of claim 1, further comprising:

light emitting diode dies (top surface of 1910 & 1911) mounted on the respective heat sinks (HS1 & HS2), the light emitting diode dies emitting different wavelengths of light (the three dies 1909, 1910 and 1911 emit at red, blue, and green wavelengths respectively, col. 30, lines 13-14).

Regarding **Claim 10**, Roberts et al., one embodiment, FIGS. 19A-B further teaches the package of claim 9, wherein the at least two lead terminals (1902 & 1903) include:

lead terminals (1902 & 1903) electrically (connected to the at least two heat sinks (HS1 & HS2) respectively; and a common lead terminal electrically connected to all of the at least two heat sinks (the base (cathode) of the dies, the cup 301 and 204, col. 29, lines 61-67 and col. 30, lines 1-11, FIG. 9a).

Regarding **Claim 12**, Roberts et al., one embodiment, FIGS. 19A-B further teaches the package of claim 9, wherein the light emitting diode dies include light emitting diode dies (1909, 1910, and 1911) emitting a first wavelength of light (red), a second wavelength of light (blue) and a third wavelength of light (green), respectively.

Regarding **Claim 13**, Roberts et al., one embodiment, FIGS. 19A-B further teaches wherein the first wavelength, the second wavelength and the third wavelength are red wavelength, green wavelength and blue wavelength, respectively (the three dies 1909, 1910 and 1911 emit at red, blue, and green wavelengths respectively, col. 30, lines 13-14).

Regarding **Claim 15**, the combining of Roberts et al., one embodiment, FIGS. 19A-B further teaches the package of claim 1, further comprising at least one septum (TP, Fig. 19a [as shown above]) formed in a single body (SB) along with the main body (204) to separate the at least two heat sinks (HS1 & HS2).

Regarding **Claim 11 and 14**, Roberts, one embodiment, FIGS. 19A-B further does not disclose the limitation as claim 11 and 14.

Nevertheless, Pederson does teach an additional heat sink (346, FIG. 18, [0118]); and a zener diode (614, FIG. 24, [0144]) mounted on the additional heat sink (note that the zener diode is mounted on one of the opening 344, FIG. 18, [0118]) (claim 11), and

a controller (50, FIG. 26, [0154]) for controlling the electric power supplied to the light emitting diode package ([0153]), wherein the controller controls the amount of the

current supplied to the respective heat sinks (microcontroller 900 switches to decrease the current, [0153]) (claim 14).

Therefore, it would have been obvious to one ordinary skill in the art at the time the invention was made to include all the limitation in claims 11 and 14, as taught by Pederson. One would have been motivated to make such a change to optimize the performance of the LED (Pederson, [0003]), and inclusion of such would improve the photometric efficiency.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Roberts et al. (Patent No.: US 6335548 B1) (hereinafter Roberts) in view of Pederson, one embodiment, FIG. 12 and further in view of Roberts et al., another embodiment, FIGS. 1-15 filed in IDS on 7/26/07.

Regarding **Claim 7**, Roberts, one embodiment, FIGS. 19A-B and Pederson, one embodiment, FIGS. 15-16 do disclose all the limitation of claim 6; and wherein the lens (401) includes at least one light emitting diode die (1910).

However, Roberts, one embodiment, FIGS. 19A-B and Pederson, one embodiment, FIGS. 15-16 do not disclose includes an optically transparent material which is directly contacted with the at least one light emitting diode die.

Nevertheless, Roberts et al., another embodiment, FIGS. 1-15 does teach includes an optically transparent material (501, FIG. 5, col. 17, lines 48-50) which is directly contacted with the at least one light emitting diode die (1910).

Therefore, since all three Roberts, one embodiment, FIGS. 19A-B, Pederson, one embodiment, FIG. 12 and Roberts et al., another embodiment, FIGS. 1-15 teach on the same light emitting device. It would have been obvious to one ordinary skill in the art at the time the invention was made to further including includes an optically transparent material which is directly contacted with the at least one light emitting diode die in Roberts, one embodiment, FIGS. 19A-B and Pederson, one embodiment, FIG. 12, as taught by Roberts et al., another embodiment, FIGS. 1-15. One would have been motivate to make such a change to improve the electrical characteristic and performance of the light emitting device.

Conclusion

“Applicants’ amendment necessitated the new ground(s) of rejection presented in this Office Action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.”

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TONY TRAN whose telephone number is (571)270-1749. The examiner can normally be reached on Monday through Friday: 7:30AM-5:00PM (E.S.T.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Lokee can be reached on (571) 272-1657. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Tony Tran/
Examiner, Art Unit 2818

/Steven Loke/
Supervisory Patent Examiner, Art
Unit 2818

TTRAN